

PROPENSITY FOR INNOVATION ADOPTION: INTEGRATION OF STRUCTURAL CONTINGENCY AND RESOURCE DEPENDENCE PERSPECTIVES

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Abstract

This paper proposes an alternative description and conceptual framework to explain innovation adoption based on the synthesis of two different theories: structural contingency and resource dependence perspectives using the assumption of strategic choice theory. Innovation adoption

is explained by the interactions between environment and strategic choice of organization via strategies to control the resource dependence condition. The notion that organization can manage its environment strategically up to some extent becomes the core interest of this study.

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INTRODUCTION AND PURPOSE OF THE STUDY

The study of organizational innovation has received a substantial amount of attention from scholars in organization theory over the years. It is possible to find research on innovation encompassing every discipline belonging to physical and social sciences.

A key premise in this conceptual literature is that managers cope with changes in their organization's external environment through the choice of an appropriate strategy and the design of a matching structure (Andrew, 1971). A relationship that is of specific interest to the author is the interactions between the environment and strategic choice on the level of innovation adoption of the organization.

Significance of the Study

Innovation has been tied closely with the changing environment that constitutes the world we are living in right now. Organizations can no longer survive with existing resources and therefore need to find alternatives to deal with such change (Boeker and Goodstein, 1991). The increase in published studies during the 1900s about innovation can be linked to the rapid advance made in science and technology. Such advance consequently leads to the increased importance of examining innovation as a phenomena

in its own right within a field of organization theory (Knight, 1967).

Early research on innovation emphasizes using the "individual" as the unit of analysis whereas most recent research on innovation uses "organization" as the unit of analysis (Roger, 1983). Innovation takes place in two processes. "Innovation Adoption" is referred to when innovation takes place at the initiation stage whereas at the implementation stage, it is called "Innovation Diffusion". The study of innovation should be distinguished between these two processes (Zaltman et al, 1977) and needs either cross-sectional or longitudinal investigation. The current paper, therefore, focuses on the initiation stage and studies "Innovation Adoption" in a cross sectional way using organization as the unit of analysis.

While the study of innovation adoption assumes that environment change leads to innovation adoption, this question has not received a great deal of empirical investigation (Boeker and Goodstein, 1991). This notion implies the use of "Structural Contingency Perspective" to explain innovation adoption. Since there are some limitations in Structural Contingency Perspective, this study proposes to add "Resource Dependence Perspective" to fill the gap. The study will emphasize the assumption of "Strategic Choice" to investigate the interactions between Structural

Contingency and Resource Dependence
Perspectives upon Innovation Adoption.

Research Questions

1. What is the relationship between Resource Dependence Strategy and Innovation Adoption?
2. What is the relationship between Organization Structure and Innovation Adoption?
3. What is the relationship between Environment and Innovation Adoption?
4. What is the relationship between Environment and Organization Structure?
5. What is the relationship between Resource Dependence Strategy and Organization Structure?
6. What is the relationship between Environment and Resource Dependence Strategy?

Objectives of the Study

1. To investigate whether and how Innovation Adoption is determined by the environment based on the integration of two different organization theories: Structural Contingency and Resource Dependence Perspectives.
2. To investigate both direct and indirect relationships between environmental factors toward innovation adoption which encompass structural and strategic factors as proposed in the study's

conceptual model

3. To propose another alternative framework for investigating and explaining Innovation Adoption in organizations.

Scope of the Study

It draws on both organization theory and strategic management literature, which mainly focus on related concepts of “open system, reciprocal, interdependence, mutual adjustment, and effectiveness”. The study will not limit innovation adoption to specific types of innovation (e.g. new product, new service, new process, or new technology adoption). The main focus of the study is the organization's “propensity for innovation adoption”. The word, “propensity”, refers to the possibility or tendency that organization would develop innovation which can be measured on a broad range of degree and content as a continuum basis (from high to low propensity or level).

The remainder of this paper is divided into four sections. The first part reviews the relevant literature on the environment-innovation interface. It introduces a classification of past research in this area with some competing models within the same construct or area. Hypotheses and critiques of those models are discussed after each concept is reviewed. The second part presents the conceptual framework or model proposed by the author using those variables discussed

in the review of literature with their operational definitions and measurement. The third part discusses research methodology for which data collection and data analysis is proposed to test hypotheses derived from the conceptual framework of the study. Finally, the last part discusses implications of the current study in terms of both theoretical and practical contributions. Some future research directions are proposed.

THEORETICAL FRAMEWORK

The purpose here is to present the frame of reference utilized for the current paper. The research and literature review related to this study is categorized into: (1) studies of Organizational Innovation; (2) studies of factors affecting innovation adoption in organizations based upon Structural Contingency Theory: organizational environment and organization structure; and (3) Strategic Choice and Resource Dependence Theories and the synthesis of these two theories to explain innovation adoption.

Organizational Innovation

The study of “innovation” began in the early 1900s, but did not develop fully until the 1960s. Everett Rogers, considered one of the leading scholars on the study of innovation, had performed monumental literature

reviews with his research associates. The number of published studies about innovation in 1962 was 405, 1,500 in 1971, and 3,085 in 1983 (Rogers, 1962; Rogers and Shoemaker, 1971; Rogers, 1983). The increase in published studies can be linked to the rapid advance made in science and technology which consequently leads to the increased importance of examining innovation as a phenomena in its own right (Knight, 1967). Much of the early research on innovation emphasizes using the individual as the focus of analysis. However, a shift in the focus occurred in the mid-seventies to use the organization rather than the individual as the unit of analysis (Rogers, 1983; Zaltman, Duncan, and Holbek, 1973). This paper uses the organization as the unit of analysis of innovation and refers to it as “organizational innovation”.

Another potential source of confusion among different innovation studies lays on the innovation process. Zaltman et. al. (1973) suggest that studies deal with the first stage to bring innovation in place (or the initiation stage) and it should be distinguished from those which focus on what happens after a decision to innovate takes place (or the implementation stage). Rogers (1983) however, proposes that the innovation process consists of both stages of initiation and implementation and needs to be studied in a longitudinal fashion in order to measure its impacts on organizations. This paper follows Rogers’ (1983) suggestion on the study of innovation

process except that it will not measure any impact of innovation on organizations. It only investigates "Innovation Adoption" of different types of organizations in a cross sectional way and uses the organization as the unit of analysis.

Definition of Innovation

This study will use the definition of innovation proposed by Thompson in 1965 that has been often cited. Thompson (1965) defines innovation as the generation, acceptance, and implementation of new processes, products, or services within the organizational setting. For the purpose of this study, innovation in the organization encompasses both initiation and implementation stages of the innovation process. Thompson's definition implies the emphasis on the implementation of the innovative items. Innovation takes place only with actual use. For instance, an intention to add a new product to the current product line does not count as an innovation. The innovation takes place when the new product plan is actually implemented. The author prefers this definition since it makes innovation tangible, empirical, and measurable rather than an abstract concept.

Innovation Adoption

Innovation in organizations is viewed as an unfolding process consisting of stages. One stage is

commonly described as the initiation stage which is the point where a new idea is introduced, sanctioned, and accepted for adoption (Rogers, 1983). The second stage is called the implementation stage, which consists of the actual management of changes that occur in the organization as the innovation is put into operation. Rogers (1983) and Zaltman et al. (1973) have developed models to depict the innovation process. There are several similarities between the two models. Both models recognize innovation as a two-stage process with sub-stages.

The Zaltman et al. (1973) model emphasizes the innovation process beginning with the individual's awareness and decision to adopt an innovation. In the second stage, it focuses on organizational characteristics that affect the innovation process. In short, this model implies that it is the individual manager who makes the organization aware of the innovation, but it is the organization characteristics that influence its successful implementation.

The Rogers (1983) model similarly focuses on both the initiation and implementation stages of organizational innovation but considers organizational characteristics in both stages. The initiation stage of this model begins when the organization searches the environment for innovations of potential value to the organization. In the implementation stage, the

innovation is modified to fit the particular organization structure and its needs. The organization structure is altered to accommodate the innovation.

DiMaggio and Powell (1983) and some institutional theorists emphasize that there are two-stage patterns of the innovation process. Innovation adoption is viewed as the early stage of adoption whereas diffusion of innovation is viewed as the later stage of adoption. It is predicted that early adoption is explained and determined by the structural characteristics of organizations or on a rational basis (DiMaggio and Powell, 1983; Tolbert and Zucker, 1983). Diffusion of innovation, on the other hand, is explained by legitimacy.

For this paper, the conceptualization of innovation adoption as a rational process by the institutional theorists will also be utilized to provide a framework for examining relationships among environment, organization structure, strategy, and innovation adoption. It is important to note that this study will not limit itself to specific types of innovation adoption (e.g. new product, new process, or new technology adoption). The focus is on the organization's propensity or possibility to develop any innovation that may encompass a broad range of degree and content.

Critique

Firstly, the assertion that innovation adoption is solely and exclusively determined by internal structural characteristics ignores the importance of external factors such as organization strategy to deal with their environment in terms of the control over their resource dependence.

Secondly, most institutional studies on innovation tend to ignore the role of the agency or managers within organizations. Innovation is determined by the rational consideration of structural fit at the early adoption stage while it becomes institutionalized in terms of legitimacy in the later stage of innovation diffusion.

This paper attempts to close the above gaps by including "strategic choice" as the moderating variable between interactions among the environment and the organization strategy and structure. Here, the role of managers as decision-makers becomes vital in determining how organizations choose the right strategy and structure to determine the level of innovation adoption in their organizations.

The main two hypotheses to be tested for this proposal focus on the influence of resource dependence strategy and organization structure upon innovation adoption.

Hypothesis 1 : *The level of control of the resource dependence strategy will*

be positively related to the propensity of innovation adoption. The higher level of control the resource dependence strategy, the higher propensity or possibility of innovation adoption.

Hypothesis 2 : *The level of flexibility of the organization structure will be positively related to the propensity of innovation adoption. The more flexible the organization structure, the higher propensity of innovation adoption.*

Determinants of Innovation Adoption

Organizational Environment

Boulding (1978) defines environment as everything outside a particular organization. The environment includes all elements outside the formal boundary of the focal organization. The relationship of the organization with its environment is grouped around the issue of survival. Dess and Beard (1984) claim that **critical resources** are those required for organizational survival which are the most relevant focus in defining organizational environment.

A central issue in the relationship between organization and environment is the degree of independence that the organization has upon its environment and it leads to two main fields of dispute. On the one hand, the **environmental determinism** or natural selection model posits that environment selects certain types of organizations to

survive and others to perish based on the fit prospect (Hannan and Freeman, 1977). This view assumes that the environment is totally determining and that management has little impact on organizational survival. On the other hand, the **agent or choice model** by Pfeffer (1982) argues that organizations are able to manage their environment strategically. Organizations can adapt to environment jolts and even create their environments (Astley and Van de Ven, 1983).

Critique

The environmental determinism model considers the environment as preeminent over the organizations that populate it. The ability of organizations to survive depends on the fit between their structural characteristics and the characteristics of their environment. This idea is similar to the Structural Contingency Perspective and therefore will be included as a part of the conceptual framework of the paper. However, by utilizing only this model, it seems to ignore the role of managers within organizations in choosing a right strategy that may control their resource dependence condition.

On the other hand, the choice model and the resource dependence model by Pfeffer (1981) both argue that organizations are able to manage their environment strategically. The growth of the organization depends upon its ability to exploit opportunities created by environmental changes (Starbuck,

1976). Resource Dependence theory assumes that organizations can exercise some degree of influence or control over the environment in order to ensure the smooth and stable flow of critical resources necessary for their survival.

This paper is also based on this second model that there is an interplay and exchange between the organization and its environment. The environment does not have to rule over the destiny of the organization. And yet, it is more likely that the environment shapes the organization than the other way around. The author wishes to construct the model assuming that the organization can manage its environment strategically up to some degree via some resource dependence strategies.

Hypothesis 3 : *The level of uncertainty of the industry environment will be positively related to the propensity of innovation adoption. The higher uncertainty of the industry conditions, the higher propensity of innovation adoption.*

Dess and Beard (1984) condense five of Aldrich's (1979) environmental dimensions into three dimensions: munificence, dynamism, and complexity. It is necessary that environment should be viewed along a continuum rather than a dichotomy (presence and absence) of these dimensions. Dess and Beard's environmental dimensions combine both the information and resource dependence perspectives and are chosen

to be a frame of reference for the current study.

Munificence is defined as the abundance of critical resources needed by firms operating within an environment (Castrogiovanni, 1991: 542). A rich environment can generate excess resources that can buffer the organization in times of relative scarcity. Dess and Beard (1984) claim that a munificent environment fosters opportunities for sustained organizational growth. Less munificence of environment leads to less uncertainty faced by the organization. Miller and Friensen (1982) also find that the munificent environment is relative to the industry conditions that provide firms with lots of opportunities to exploit through innovation.

Hypothesis 3a : *The munificence of critical resources in environment will be negatively related to the level of uncertainty of the industry environment.*

Dynamism is based on the construct of uncertainty about environment (Dess and Beard, 1984). Turbulence and instability make an environment uncertain, more dynamic and volatile. Thompson (1965) claims that decision-makers cannot avoid dealing with uncertainty. Dynamic industry is characterized by frequent changes in marketing practices, products and services, technologies, and customer needs (Miller and Friesen, 1982). The higher degree of industry

dynamism means the higher uncertainty of the environment.

Hypothesis 3b : *The dynamism of the environment will be positively related to the level of uncertainty of the industry environment.*

Complexity is a combination of heterogeneity and dispersion concepts proposed by Aldrich (1979). Heterogeneity refers to the degree of differentiation between the elements of the population an organization deals with and any social forces affecting resources. Dispersion is a measure of the degree to which resources are evenly distributed over the range of the environment or concentrated in particular locations. Complexity may refer to the number and diversity of competitors, suppliers, buyers, and other environmental actors (Smart and Vertinsky, 1984). As environmental change becomes more frequent and complex, it motivates the organization to seek more information and opportunities to innovate.

Hypothesis 3c : *The complexity of environment will be positively related to the level of uncertainty of the industry environment.*

Organization Structure

Structure is an essential component of an organization. Structure is a multidimensional construct. Three of

the most often cited dimensions of organization structure by scholars are complexity, formalization, and centralization (Hage and Aiken, 1970). Under an uncertain environment, most organizations seem to adopt a flexible organization structure in order to deal with such high uncertainty and be able to survive. Bidault and Cummings (1994) view that flexibility of organization structure is one of the most vital factors for organizations to adopt innovation and new knowledge.

Hypothesis 4 : *The level of uncertainty of the industry environment will be positively related to the level of flexibility of the organization structure. The higher uncertainty of the industry conditions, the more flexibility of the organization structure.*

Complexity is the availability of number of distinct products or services that an organization offers (Hage and Aiken, 1970). The complexity dimension is usually measured by three sub-dimensions: specialization, functional differentiation, and professionalism. Cross-functional cooperation is perceived as critical to innovation success by various departments or units, including research and development, marketing, and manufacturing (Song, Montoya-Weiss and Schmidt, 1997). It is this transfer and recombination of information that facilitates the creation of new knowledge. High complexity refers to a more flexible organization structure.

Hypothesis 4a : *The complexity of organization structure will be positively related to the level of flexibility of the organization structure.*

Formalization reflects the extent of rules that govern and define those duties and responsibilities (Aiken and Hage, 1971). Bidault and Cummings, (1994) have identified formalization as an impediment to the spontaneity and flexibility necessary for internal innovation. Formalization tends to obstruct innovation adoption. Daft (1992) proposes that formalization is often measured by simply counting the number of pages of documentation within the company. Documentation includes job procedures, job descriptions, regulations, and policy manuals. A high degree of formalization refers to a less flexible structure.

Hypothesis 4b : *The formalization of the organization structure will be negatively related to the level of flexibility of the organization structure.*

Centralization refers to the extent to which organizational decision-making authority is dispersed or concentrated (Aiken and Hage, 1971). When decision making is kept at the top of the hierarchy, the organization is highly centralized. A high degree of centralization refers to a less flexible structure. Centralization creates a non-participatory environment that reduces communication among participants and involvement with organization projects

and is associated negatively with innovation success (Damanpour, 1991; Moenaert et al. 1994).

Hypothesis 4c : *The centralization of the organization structure will be negatively related to the level of flexibility of the organization structure.*

Critique

The views of structural dimensions having an impact on organizational performance that are measured by innovation adoption in these studies could be interpreted as Structural Contingency Theory. The main assumption is that there is no one best way to structure the organization. There must be a fit or congruence between various contingency factors such as environment, size, technology, and structure so that it will lead to organizational effectiveness.

The weak point of this perspective is that it overlooks the influence of power of decision-makers in the organization. Organizational performance is solely determined by the fit between contingency variables that has to conform to the environmental constraints. Decision-makers have the least power in determining the structure of the organizations whereas the environment is seen as having the most influence to determine the structure.

However, the current paper examines the interactions (or two-way

perspective) between structural dimensions and power of decision-makers reflected in their “strategic choice” in managing the environment. Not only should there be a fit between structural dimensions, but also decision-makers’ strategic choices as important determinants of organizational performance.

Strategy-Structure Relationship: in Past Studies

The interactions between strategy and structure become highly complex. Miles and Snow (1978: 7) propose two perspectives of a link between strategy and structure: (1) strategy shapes or causes structure, and (2) structure constrains strategy. A detailed discussion on each perspective is summarized as follows:

Strategy causes structure: This argument is consistent with a rational, goal-oriented approach where structure and other means for implementing strategy are viewed as management’s tools to achieve the goals spelled out in their strategic plan. Two of the most influential proponents of this link have been Drucker (1954) and Chandler (1962). In his study of 100 U.S. firms, Chandler discusses the impact of strategy on structure. He discovers that “a new strategy required a new or at least refashioned structure if the enlarged enterprise was to be operated efficiently” (p.15). Following these early works, Thompson (1965), Lawrence and Lorsch (1969), and

Perrow (1967) have also attempted to develop frameworks and criteria for making choices about structure given the nature of environment and management’s choice of strategy. These studies all show that structure tends to follow strategy and that the two must be properly aligned for an organization to be effective (Miles and Snow, 1978).

Structure constrains strategy: This argument is based on a belief that the past strategic decisions affect subsequent strategy formulation, and thus, structure used to implement prior strategy are likely to restrict subsequent strategic choices. In other words, structure determines strategy. Fouraker and Stopford (1968), who attempt to extend Chandler’s findings to multinational companies, find that those companies with a diversified form of structure are far more likely to move into foreign operations than centralized, functionally structured companies. March and Simon (1958) discuss how managers make decisions within bounded rationality stating that human beings are limited in their ability to make completely rational decisions. Organization structure evolves so as to prevent uncertainty from overwhelming these limitations.

Strategy-Structure Relationship in Current Study: To Overcome Weaknesses

The author believes that it is rather difficult to study and prove a causal

relationship between strategy and structure. The third perspective of the strategy-structure relationship called “Strategy and Structure as Emergent Process” is preferred. It proposes that both strategy and structure occur simultaneously. This view corresponds more closely with the definition of strategy proposed by Miller (1986) as a process that intertwines with structure, both affecting structure and being affected by it. It means that managers can adjust either strategy or structure in order to obtain a more consistent fit or match between the two. This idea leads the author to believe that a consistent pattern among the elements of strategy and structure is more important than determining which comes first.

Strategic Choice and Resource Dependence Perspectives

Strategic Choice Perspective

John Child (1972) proposed a “Strategic Choice Model” which argues that organizations occasionally have the power to select and manipulate or control their environment. Therefore, strategic choice is viewed as the “moderating factor” between the environment and organizational performance. This study investigates the organizational performance in terms of the propensity of “innovation adoption”. It represents the outcome of interactions between choices of organization strategy and organization structure.

Strengths of Strategic Choice Perspective

1. Based on its assumptions, the strategic choice model introduces an important role of decision makers or dominant coalitions as the moderating factor who are capable of managing and manipulating situational factors as well as organizational structure. Managers (decision-makers) can “choose” environments and structural arrangements rather than just being constrained passively by them. So the model decreases the emphasis on constraints and increases the emphasis on choice instead.
2. Based on the strategic choice model, some important situational factors such as size and technology are chosen by decision makers as well as structure and are combined into an internal “configuration” which will lead to organization effectiveness as the ending result. On the other hand, the contingency theory views the situational factors as determinants of the organizational structure or design where the ending result is the structure itself.
3. The model separates the environment factors as the most important inputs to be analyzed and evaluated during the strategic choice process and decision makers can also change or manipulate the environments to suit their final choice of goals and strategies. Environments here are analyzed in

terms of people's perception and evaluation. They are viewed as "it is" and as "it is perceived".

4. Strategy is viewed as the result from strategic choice that will in turn influence how contingency factors are arranged as a fit or matching configuration with structure and human resources in order to produce the organizational effectiveness.
5. The model is based on an open systems approach where organizations interact with environments and the outputs of organizations are brought as feedback into the system when decision-makers make strategic choice.

Limitations of Strategic Choice Perspective

1. Based on the assumptions, the model agrees with the inequality of all members in the organization in terms of power to make change or decisions. However, it does not provide sufficient explanation on how and why all people do not have the same level of power. The model only mentions that it is the decision maker or dominant coalition who makes strategic choice.
2. The strategic choice model also lacks the information on how decision makers can manipulate the environments, whereas, Narayanan and Nath's (1993) resource dependence model proposes ways to

manipulate the environment.

3. The model overlooks the importance of those organizational members who do not hold power by only emphasizing on dominant coalition groups. Although in the assumption it mentions the "collective action" by those non-power groups, the model does not elaborate any explanation to further support this argument concerning non-power groups.

Child's Critique on Other Theories

Child's (1973) model marks the beginning of attention given to the problems of previous models on "structural contingency" approach. The critiques mentioned are as follows:

1. Structural contingency theory over-emphasizes constraints over choice. It moves us away from the possibilities of choosing structural arrangement. Organization design is then "constrained" rather than being "chosen".
2. Structural contingency theory views organization design as an "end" rather than a "means" of reconciling criteria for performance.

Relationships with Other Theories

1. Strategic Choice Model expands the conceptual framework proposed by contingency theory by adding strategic choice as the moderating

- variable between situational factors and the structure of organizations.
2. Strategic Choice Model criticizes contingency theory in terms of its de-emphasis on people's choice as inferior to situational constraints and includes the structure as one of the elements in the configuration that leads to organizational effectiveness at the end. So organizational structure is viewed as the means rather than the end in itself.
 3. Strategic Choice Model suggests the same argument as the Resource Dependence Model in terms of the importance of organizations to adapt to their environments in order to be effective.

Resource Dependence Perspective

Resource dependence theorists argue that organizations attempt to obtain stability and legitimacy, which is achieved through interdependencies and the exercise of power and control (Pfeffer & Salancik, 1978). The effectiveness of organizations depends on their ability to acquire the resources needed for survival.

According to Pfeffer and Salancik (1978), organizations can select one of four strategic choices or a combination of the four to balance their dependencies. Firstly, they may adapt to constraints. Secondly, they may alter interdependencies by merger or diversification. Thirdly, they may

negotiate their environment by interlocking directorships/control or joint ventures. Fourthly, they may attempt, by political action, to change the legality of its environment.

Critical Resources

Critical resources are the focus of the resource dependence model since it is important for organizational survival and growth. The organization therefore depends on external organizations and stakeholders for resources. Pfeffer and Salancik (1978) discuss three conditions that define the importance of particular resources to the organization.

Resource criticality is whether the absence of the resource discontinues the operation and functioning of the focal organization.

Discretion over resource allocation and use is whether the focal organization has control over the resource in terms of its allocation and use.

Concentration of resource control is whether the focal organization can find the alternative sources of the resource or how far those organizations who control the resource have a monopoly over it.

Resource Dependence Strategy

Previous studies offer many fragmented terms to explain how

organizations manage their resource dependence. The current paper attempts to combine those forms or strategies proposed by resource dependence theorists and refer them according to the level of control that managers of the focal organization would like to impose on the environment or resource dependence condition. Three strategies to control environment are:

Low control strategy refers to “compliance”. It is when organizations comply with their environmental actors. Narayanan and Nath (1993) state that compliance is sometimes not a satisfactory solution. It makes future adjustment difficult. Compliance allows the least discretion and minimum autonomy of organizations to reduce their resource dependence.

Moderate control strategy refers to “internal adjustment”. Organizations may reorganize themselves or diversify their products in order to reduce their dependence on other organizations. By this means, therefore, they should have greater control of their environment when compared with compliance strategy.

High control strategy refers to “business alliance”. Organizations may also form interdependence with other organizations in the form of trade associations, joint ventures, and mergers. This strategy yields the maximum control of organizations to reduce their resource dependence. It fosters the high degree of possibility

for innovation adoption of organizations.

Hypothesis 5 : *The level of control of the resource dependence strategy will be positively related to the flexibility of the organization structure. The higher level of control the resource dependence strategy, the more flexibility of the organization structure.*

Hypothesis 6 : *The uncertainty of the industry environment will be positively related to the level of control of the resource dependence strategy. The higher uncertainty of the industry environment, the higher level of control of the resource dependence strategy.*

Hypothesis 6a : *The munificence of critical resources in the environment will be negatively related to the level of control of the resource dependence strategy.*

Hypothesis 6b : *The dynamism of the environment will be positively related to the level of control of the resource dependence strategy.*

Hypothesis 6c : *The complexity of environment will be positively related to the level of control in the resource dependence strategy.*

Table 1 summarizes the relationships between strategic choice and resource dependence theory. The author derives the conceptual framework of this study by

summarizing all of the main concepts discussed in the literature review regarding the relationships among innovation adoption, structural contingency theory, and resource dependence theory. These main concepts are presented in Table 2.

Table 1: Comparison between Strategic Choice and Resource Dependence Perspectives

Aspects	Strategic Choice	Resource Dependence
Assumption	- The importance of decision makers to manage contingency factors such as environment and organization structure	- Choices are made in order to reduce resource dependence and overcome uncertainty by obtaining stability and legitimacy through exercise of power and control over the critical resources needed for survival
Main goal	- To achieve a congruence or fit among contingency factors surrounding decision makers (e.g. environment, structure, strategy, etc.)	- To reduce the organization's uncertainty of environment - To reduce resource dependence pressures
Key predictors (very similar, complementary, rather than contradictory)	- The fit between environment and organization structure on choices of strategy	- The fit between choices of resource dependence strategies and conditions of uncertainty of critical resources
Limitations	- Lack of information on how decision makers manipulate environment (**)	- Propose a fragmented set of ways the organization control its resource dependence

(Information derived from Child, 1972; Pfeffer & Salancik, 1978; Narayanan & Nath, 1993,)

Table 2: Comparison of Innovation Adoption, Structural Contingency Perspective, and Resource Dependence Perspective

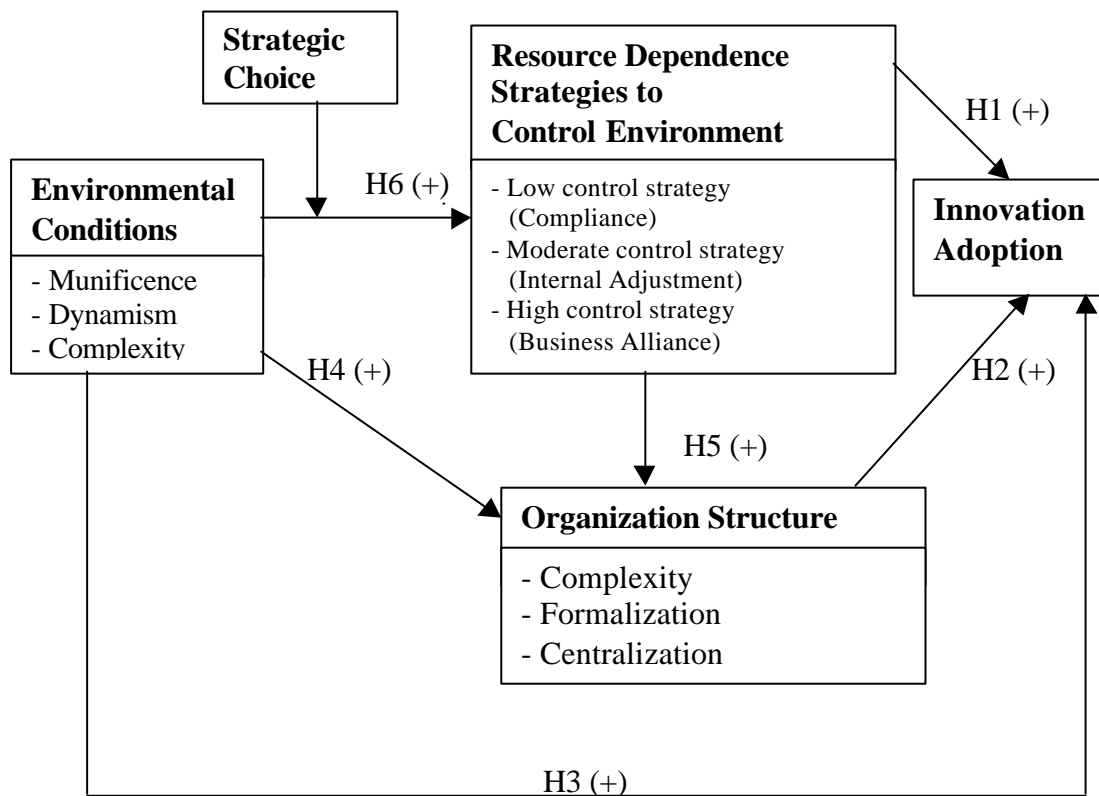
Aspects	Innovation Adoption	Structural Contingency	Resource Dependence
Assumptions	<ul style="list-style-type: none"> -Considerable freedom to choose between alternatives -Needs and relative advantages of innovation reduce uncertainty of innovation 	<ul style="list-style-type: none"> - Choices are constrained by multiple external pressures - Effective organization structure and performance depends on a match between internal features (or contingency factors) and the demands of its environments - There is no one best way to design organization structure 	<ul style="list-style-type: none"> - Choices are constrained by multiple external pressures - Organizational environments are interconnected - Organizational survival depends on responsiveness to external demands
Motive for change	<ul style="list-style-type: none"> - Perceived needs 	<ul style="list-style-type: none"> - A fit or congruence and rationality 	<ul style="list-style-type: none"> - Stability and legitimacy through reduction of resource dependence on others
Mechanism of change	<ul style="list-style-type: none"> -Change agents, decision makers 	<ul style="list-style-type: none"> - An organization structure (design) that best fits those contingency pressures 	<ul style="list-style-type: none"> - A variety of strategies to control critical resources
Source of change	<ul style="list-style-type: none"> -Internal assessment of the relative advantages of innovation's return 	<ul style="list-style-type: none"> - External pressures - A fit among internal features of the organization 	<ul style="list-style-type: none"> - Resource scarcity - Reduction of uncertainty and interdependencies
Context	<ul style="list-style-type: none"> -Rational innovation decision process 	<ul style="list-style-type: none"> -Passive role of decision makers to influence external demands -A match between internal features of the organization and the external demands of its environment 	<ul style="list-style-type: none"> - Active role of decision makers to influence external demands through strategies - Management of scarce resources - Coping with interdependencies

CONCEPTUAL MODEL AND DEFINITIONS

Conceptual Model of Innovation Adoption

Independent Variables

Dependent Variable



The conceptual model is a nomological network of the constructs to be used and displays the hypothesized relationships predicted to exist among the components of each construct. Those important constructs of the model are as follow: independent variables consist of organizational

environment, strategic choice, resource dependence strategy to control environment, and organization structure; while the dependent variable is innovation adoption.

The model displays three relevant variables that may influence innovation

adoption. They are (1) organization environment; (2) resource dependence strategy; and (3) organization structure. However, since there are numerous previous empirical studies concerning the effect of environment on organizations, this study places greater emphasis on the effect of resource dependence strategy and organization structure on innovation adoption.

Variables and Operational Definitions

Dependent Variable

Innovation adoption is chosen to be the dependent variable of the study and will be predicted along the continuum of high and low propensity or possibility of innovation adoption. Innovation adoption will be measured based upon two concepts of the new product development literature proposed by Kerin et. al. (1991); Lieberman and Montgomery (1988); and Weigelt and Camerer (1988). The two indicators are the first-mover predisposition and the competitive equity building. The higher the degree of organizations as being first movers and leaders within their competitive situations indicates a higher propensity of innovation adoption.

Independent Variables

Resource Dependence Strategy will be measured using managerial responses in dealing with resource

dependence conditions as proposed by Narayanan and Nath (1993) and adapted from Pfeffer (1982). Compliance strategy to those who control critical resources of the sample refers to the “low level” of management control over resource dependence conditions. Internal adjustment strategy represents the “moderate level” which may be measured as whether the sample reorganizes its structure or offers new products or services. Business alliance strategy refers to the “high level” of control in resource dependence strategy. It may take the form of collective action with other organizations to have more control over critical resources.

The study will also implement qualitative methods that include in-depth interviews and participant observation. Data obtained to measure resource dependence strategy will have to be analyzed and categorized into one of these three levels of control. Qualitative findings will be used as supporting data and to provide further explanation of the proposed model.

Organization Structure is measured by using Hage and Aiken's (1970) structural dimensions of complexity, formalization, and centralization.

Environment will be measured by using Dess and Beard's (1984) environmental dimensions of munificence, dynamism, and complexity. This variable will only be investigated in terms of having a

“direct” or “indirect” relationship with innovation adoption. Due to reasons previously mentioned, environment is not the focus of the current study.

Moderating Variable

Strategic Choice: Environmental dimensions are considered to influence the decision to adopt innovations. This

influence is manifested through the managerial choice of resource dependence strategy and organization structure. The structure and strategy then interact with each other to respond to environmental demands and conditions. Finally the result of this interaction is measured upon the level of innovation adoption by the sample.

Operational Definition and Measurement

Dependent Variable: Innovation Adoption

Indicators	Meaning	Measurement
1.1 First-mover predisposition	The perceived strategic posture of the organization in terms of degree to which the firm “initiates” competitive situations and is an early market entrant	A multi-item, five-point Likert-type scale that reflects the degree of being the first mover in the industry
1.2 Competitive equity building	The degree to which the firm values and seeks a high-profile leadership position within its industry	The multi-item, five-point Likert-type scale that reflects the firm’s extensive participation in industry forums and solicitation of media coverage

**Independent Variables: Environment, Organization Structure, and Resource
Dependence Strategy**

Indicators	Meaning	Measurement
1. <u>Environment</u> 1.1 Munificence	The abundance of critical resources needed by firms operating within the same industry environment	A multi-item, five-point Likert-type scale that reflects the perceived scarcity of critical resources needed by the firm
1.2 Dynamism	The frequent changes in marketing practices, products, services, technologies, and customer needs	The multi-item, five-point Likert-type scale that reflects the frequency of changes in various conditions within the firm's industry
1.3 Complexity	The degree of differentiation and dispersion of critical resources	The multi-item, five-point Likert-type scale that reflects the number and diversity of suppliers, customers, and competitors

<p>2. <u>Organization Structure</u></p> <p>2.1 Complexity</p>	<p>The availability or number of distinct products or services the firm offers</p>	<p>The multi-item, five-point Likert-type scale that reflects the number and diversity of the firm's products or services</p>
<p>2.2 Formalization</p>	<p>The extent and number of rules that govern duties and responsibilities of employees within the firm</p>	<p>The multi-item, five-point Likert-type scale that reflects the number and extent of rules and work procedures of the firm's operation</p>
<p>2.3 Centralization</p>	<p>The extent to which the firm's decision making is concentrated at the top level of organizational hierarchy</p>	<p>The multi-item, five-point Likert-type scale that reflects the concentration of decision making authority of the firm</p>
<p>3. <u>Resource Dependence Strategy</u></p> <p>3.1 Low control strategy</p>	<p>The degree of the firm's adaptation to whatever the demands from the external environmental actors</p>	<p>The multi-item, five-point Likert-type scale that reflects the compliance with environmental actors</p>
<p>3.2 Moderate control strategy</p>	<p>The degree of the firm's internal adjustment and re-organizing its internal structure of process and diversify its products or services</p>	<p>The multi-item, five-point Likert-type scale that reflects the re-organizing within the firm and the attempt to diversify its products or services</p>
<p>3.3 High control strategy</p>	<p>The degree to which the firm forms external interdependencies or business alliances with other firms in the forms of trade associations, joint ventures, or mergers</p>	<p>The multi-item, five-point Likert-type scale that reflects the extent that the firm forms business alliances</p>

Meaning of Scores Derived from Measurement Scale

- Higher scores on innovation adoption scale refer to higher propensity of innovation adoption.
- Higher scores on environment scale refer to higher level of uncertainty of environment.
- Higher scores on organization structure scale refer to higher level of flexibility of organization structure.
- Higher scores on resource dependence strategy scale refer to higher level of control in the resource dependence strategy.

PROPOSED RESEARCH METHODOLOGY

Data Collection

Unit of analysis will be “organization” that includes firms within the following industries: computer software, computer peripheral, OEM automotive component (Original Equipment Manufacturer). These firms are categorized as manufacturers of their respective products and engage in new product development, technology innovation, or both. Sample size is determined by using stratified sampling technique based on all names of these firms located in Thailand. The estimated sample size is 100 firms.

Data will be collected through both Qualitative Method such as in-depth interview with the firms’ executives and participant observation and Quantitative Method. Survey questionnaire will be sent to mid-level managers of these firms. Since the study uses organizations as “unit of analysis”, it is necessary to derive the mean or average scores for each firm surveyed. The author plans to send 20 questionnaires to mid-level managers of each firm, then the total scores of all managers are summed up and the average score is calculated to represent the scores of each firm in the sample.

Data Analysis

Path Analysis will be used to investigate both direct and indirect relationships proposed in the model. Factor Analysis will also be used to reduce a large number of variables by grouping those that are closely related.

Check for Validity and Reliability

Cronbach alpha coefficient calculation is used for the test of reliability or internal consistency of each composite variable. All measurement scales are modified from what were used by previous scholars who studied these variables. The scales should have content validity.

STUDY IMPLICATIONS

The contribution of this integrated perspective of structural contingency and resource dependence theories to explain innovation adoption is that it represents an important step forward in organizational theory. It gives purpose to the notions of strategy and managers or decision-makers while recognizing the constraining and enabling influence of the environment. It has interesting implications for organizational theory because it rejects the notion of paradigm incommensurability between two different theories. It tackles the unhelpful dichotomy in organizational theory between environmental determinism and agency and choice theories by encouraging the synthesis of these two different perspectives.

From a theoretical point of view, the author agrees with the postures of Aiken and Hage (1971) that there is no ideal organizational structure for innovation adoption. Secondly, there is an interaction between the organization and its environment. Managers or decision-makers of the organization can manage their environment strategically up to some extent. Such notion refers to the concept of "Strategic Choice". The environment does not necessarily select in and out the organizations. According to the proposed model, managers can adjust their organization structure and strategy to fit the environment, which refers to environmental determinism perspective,

on one hand. Or managers can select those dimensions in the environment and exploit them in the manner that yields the innovation benefits to the organization, which refers to agency and choice perspective, on the other hand.

Thirdly, organizations tend to manage or control the environment through resource dependence strategies in order to balance their external dependencies. Due to the proposed model, managers in practicing side will know how to manage and manipulate their organization structure, choose appropriate strategy to deal with uncertainty of the environment.

Finally managers can be aware of their firm's propensity for innovation adoption in order to reduce the uncertainty and threat while exploiting environmental opportunities to optimize the firm's effectiveness or success. The better explanation on organization performance in terms of innovation adoption is achieved when utilizing technology-oriented industry samples with cross-sectional research design. Researchers should be well aware of their unit of analysis, level of study, and the study methodology.

The findings of this study will also have important implications for practicing managers. It is important that managers minimize misfits among environmental dimensions and structural and strategy dimensions as they prepare their organization to deal

with innovation adoption. In essence, managers have to fine-tune their organization's structure.

While a variety of factors may be the driving forces behind an organization's innovation adoption in the initiation stage, an important factor may be the manner in which managers scan their environments. Jennings and Lumpkin (1992), as an example, report that some organizations employ an environment scanning activity that places more importance on evaluating opportunities while others use a scanning activity that evaluates competitive threats. Some organizations use the environment scanning activity for both opportunities and threats. An area for future research is the relationship between environmental scanning and innovation adoption.

Another perspective regarding innovation adoption is that decision-

makers use different frames of reference to make sense of events. Daft and Weick (1984) view decision makers as the architects of their environment and adapt to these interpretations. Another area of future research should involve determining how the interpretations of decision-makers affect innovation adoption of organizations.

Finally, researchers might wish to analyze the relationship among innovation adoption, structure, strategy, and performance in different industry settings on different occasions—one industry sample at a time. It is to help us understand any similarity or difference of organizational innovation's impact in various industries such as manufacturing plants, service companies, and non-profit institutions.

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